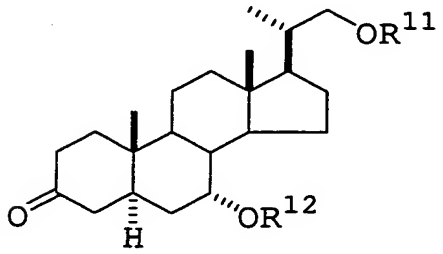
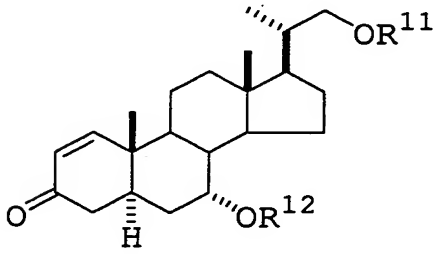
Claims

1. A method for producing a mixture of a 5α-pregnane derivative represented by the formula (II):



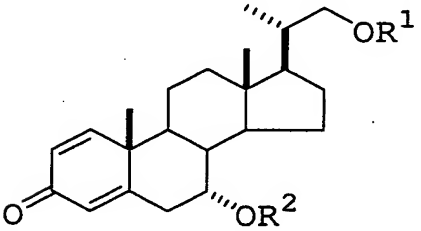
(II)

wherein R^{11} and R^{12} are each independently a hydrogen atom or a hydroxyl-protecting group, and a 5α-pregnane derivative represented by the formula (III):



(III)

wherein R^{11} and R^{12} are as defined above, which comprises reacting a pregnane derivative represented by the formula (I):



(I)

wherein R^1 is a hydroxyl-protecting group and R^2 is a hydrogen atom or a hydroxyl-protecting group, with a metal selected from alkali metals and alkaline earth metals in the presence of a proton donor and an amine and/or ammonia.

2. The method of claim 1, wherein R^2 and R^{12} are hydrogen atoms.

3. The method of claim 2, wherein R^1 and R^{11} are tri-substituted silyl groups having three, same or different, substituents selected from the group consisting of an alkyl group

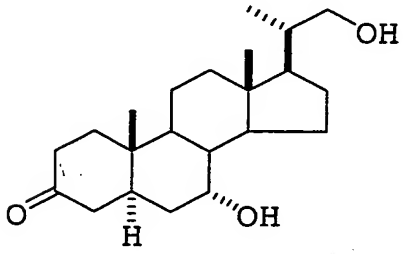
optionally having substituent(s), an aryl group optionally having substituent(s), an alkoxyl group optionally having substituent(s) and an aryloxy group optionally having substituent(s).

4. The method of claim 3, wherein R^1 and R^{11} are tert-butyldimethylsilyl groups.

5. The method of any one of claims 1 to 4, wherein the metal is an alkali metal.

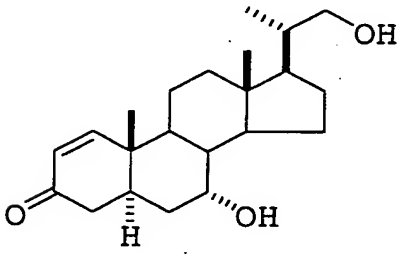
6. The method of claim 5, wherein the alkali metal is lithium.

7. A method for producing a mixture of (20S)-7α,21-dihydroxy-20-methyl-5α-pregn-3-one represented by the formula (VI):



(VI)

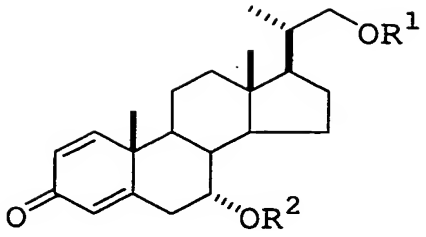
and (20S)-7α,21-dihydroxy-20-methyl-5α-pregn-1-en-3-one represented by the formula (VII):



(VII)

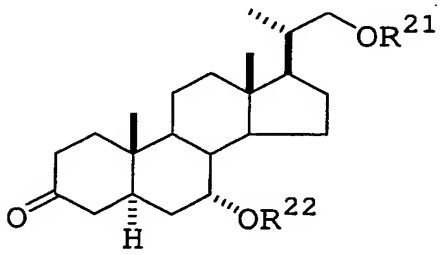
, which comprises the steps of

(a) reacting a pregnane derivative represented by the formula (I):



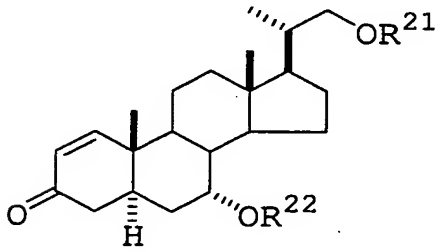
(I)

wherein R^1 is a hydroxyl-protecting group and R^2 is a hydrogen atom or a hydroxyl-protecting group, with a metal selected from alkali metals and alkaline earth metals in the presence of a proton donor and an amine and/or ammonia to give a mixture of a 5α-pregnane derivative represented by the formula (IV):



(IV)

wherein R^{21} is a hydroxyl-protecting group and R^{22} is a hydrogen atom or a hydroxyl-protecting group, and a 5α-pregnane derivative represented by the formula (V):



(V)

wherein R^{21} and R^{22} are as defined above; and

(b) eliminating the hydroxyl-protecting groups of the mixture obtained by the aforementioned step.

8. The method of claim 7, wherein R^2 and R^{22} are hydrogen atoms.

9. The method of claim 8, wherein R^1 and R^{21} are tri-substituted silyl groups having three, same or different, substituents selected from the group consisting of an alkyl group

optionally having substituent(s), an aryl group optionally having substituent(s), an alkoxyl group optionally having substituent(s) and an aryloxy group optionally having substituent(s).

10. The method of claim 9, wherein R^1 and R^{21} are tert-butyldimethylsilyl groups.

11. The method of any one of claims 7 to 10, wherein the metal is an alkali metal.

12. The method of claim 11, wherein the alkali metal is lithium.